



## **Weekly Summary Report**

### **USEPA Oversight, Sauget Area 1, Sauget, IL**

### **WA No. 239-RSBD-054V / Contract No. 68-W6-0025**

**Week Ending Friday, July 2, 2004**

This report summarizes the Remedial Investigation/Feasibility Study (RI/FS) fieldwork conducted by Monsanto, Solutia, and their contractors from June 26, 2004 through July 2, 2004 at Sauget Area 1 Sites. The current RI/FS work consists of a dense non-aqueous phase liquid (DNAPL) Characterization and Remediation Study. CH2M HILL provided field oversight of work throughout the week.

### **Contractors Onsite**

- Golder Associates (consultant for Monsanto/Solutia)
- Groundwater Services Inc. (consultant/contractor to Monsanto/Solutia for the DNAPL Characterization and Remediation Study)
- Bird Seismic Services Inc. (seismic survey fieldwork subcontractor to Resolution Resources Inc., who is subcontracted to Groundwater Services Inc. for the seismic survey and will perform all data evaluation)
- Philip Environmental (subcontractor working at Site G to clear site for seismic survey)

### **Work Performed This Week**

Bird Seismic Services Inc. (Bird) was onsite during the week conducting the Geophysical Survey at Sauget Area 1. This phase of work is part of Task 3 of the Groundwater Services Inc. (GSI) Work Plan for the DNAPL Characterization and Remediation Study. The seismic crew worked five days through the week, completing the seismic survey on June 30, 2004. Philip Environmental (Philip) completed clearing operations at Site G on June 26, in preparation for the seismic survey of the area.

Groundwater Services Inc. (GSI) was onsite June 26, 2004 to repeat the non-aqueous phase liquid (NAPL) survey at one well, EE-11, located at Site G.

Golder Associates (Golder) was onsite throughout the week providing oversight for Monsanto/Solutia of the Sauget Area 1 work. Additionally, on July 1, 2004, a Golder team sampled an unknown material observed on the ground surface at Site G following the site clearing.

### **Seismic Survey**

The three-dimensional seismic reflection survey is being conducted to map the bedrock surface and to identify topographic low points that could potentially enable DNAPL to accumulate.

The seismic survey consists of the following components:

- A shock grid is positioned on a 27½-foot grid spacing. Every point in the grid will be 'shocked' – that is, the energy-source (hammer) will be applied at each location on the shock grid when collecting data.
- A receiver grid is positioned on a 55-foot spacing. The receiver grid is the network of geophones (installed into the ground surface) connected by cables running east-west that will be used to listen and detect the response to the shocking of the ground surface with the hammer.
- The shock grid is initially laid out and marked with paint and flags, each row is incrementally numbered. Every third point in the shock grid is located using global positioning survey (GPS) technology. A base for the GPS unit was conventionally surveyed in relation to a local USGS survey monument.
- Cables are strung east-west across the receiver grid, connecting all the geophones. The cables are tied into three seismographs.
- The hammer, a truck-mounted 207 pound spring-recoiled hammer that hits a metal plate on the ground surface, is set to hit the plate with several replicate measurements at each shock point. The seismographs simultaneously collect data when the energy source is applied at each shock point. At some shock point locations during the week a sledgehammer was used as an alternate energy source due to inaccessibility of the location or an improved signal response.
- Following collection of data, the cables and geophones are picked up and moved to the next survey section.

On June 26, Philip Environmental finished clearing Site G in preparation for the seismic survey. The dense vegetation and many trees were cleared in rows across the site using bobcats, chainsaws, and a backhoe. The rows cleared created a pathway for the 27½-foot spacing of the shock grid across the site. Some of the eastern bank of Dead Creek, within the creek fenceline, was also cleared using machetes and a chainsaw.

Bird performed the seismic downhole surveys on the three existing bedrock wells at Sites H, G, and I, on June 26, 2004. The downhole survey consisted of placing an hydrophone (receiver) down the well to total depth, applying an energy source (sledgehammer on metal plate) a known distance from the well, and collecting response data via the receiver and seismographs. The hydrophone was pulled up gradually, with data collected at 5-foot intervals and several repeated measurements at each depth. NAPL was not observed on the hydrophone at wells BR-H or BR-G, however a small amount of oily-dirt was noticed on the equipment pulled from well BR-I.

Bird laid out the cables and installed the geophones for the final section of the seismic survey between June 27 and 28. This area starts approximately 100 feet east of Dead Creek and extends west across Site G and behind the Wiese warehouse. The northern boundary was Queeny Avenue and the southern-most extent of the grid was within the fenced area adjacent to the Toxic Substances Control Act (TSCA) cell. Between June 28 and 30, Bird shocked points and collected data in this survey area. Some areas of the survey grid were located using GPS on June 30, after some flagged stations had been moved during the Site G clearing.

## NAPL Survey

GSI was onsite on June 26, 2004 to repeat the NAPL survey measurements at existing well EE-11 within Site G following the recovery tests performed at the well the week ending May 21, 2004.

The DNAPL and light non-aqueous phase liquid (LNAPL) survey consisted of the following measurements: depth to LNAPL and/or DNAPL, depth to water and total well depth with an oil-water interface probe; a weighted cotton string was dropped to the bottom of the well and inspected for evidence of staining; a Teflon bailer was lowered through the top of the water column and to the total depth of the well and inspected for the presence NAPL.

The results of the resurvey of well EE-11 are presented in Table 1 in comparison to the previous survey results. The GSI technicians concluded that either a sheen of LNAPL or an oily residue remained inside the casing at well EE-11, however significant NAPL had not recharged into the well.

**TABLE 1**

DNAPL Survey of Existing Wells, Oversight of Re-survey at Well EE-11 and Past Observations, Week Ending July 2, 2004.

Site	Well ID	Historical DNAPL Thickness (USACE)	Date Surveyed	NAPL Observations	Comment
Site G	EE-11	Full depth	5/17/04	NAPL noted in bailer through surface testing. ~9 feet NAPL stained on string. ~10 feet NAPL stained on oil/water interface probe.	Did not lower bailer to total depth of well because string was stained throughout profile.  Depth to NAPL was ~14' BTOC. Tone changed ~17' BTOC. Total depth of well was ~23' BTOC.
			5/19 and 5/20/04		A total of ~ 8 gallons of liquid was purged from well EE-11
			6/26/04	No NAPL observed within bailer at either water surface or total depth testing. Dark brown/oily coating on outside of bailer from near the water surface.  Slight staining on string predominantly at water surface.	No NAPL observed (i.e., no tone change) with oil-water interface probe.

**Notes:**

Historical DNAPL Thickness (USACE) – Table 4-0c, US Army Corps of Engineers Report, from field 1999-2000.

## Unknown Material Observed at Site G

During the week, an unusual unidentified material was observed at two locations within Site G. This material was visible following the clearing of the site in preparation for the seismic survey. Photographs of the material are presented below. There appears to be two different forms of the material observed, which is present at two locations both in the

western side of Site G. A yellow to slightly green substance is visible in several chunks from 1 to 3 inches in diameter with a yellow staining of the surrounding soil. A dark grey to black, shiny material that appears to increase in viscosity in the sunlight, was observed in 2 or 3 patches - each between 0.5 to 2 inches in diameter. All unknown materials were observed within the locked fence area of Site G. Following the discovery of the materials during the week, caution tape was installed surrounding the two locations, and the areas were skipped by the seismic crew during the survey.

On July 1, 2004, Golder collected samples of the unknown materials observed at Site G. Samples of both the yellow and the black colored materials were collected at one location, and one composite sample was collected at the second location. The samples were delivered to Severn Trent Laboratories in St. Louis, Missouri for Volatile Organic Chemicals (VOCs), Semi-Volatile Organic Chemicals (SVOCs), metals, herbicides, pesticides, and PCBs analyses on a standard 14-day turnaround time. Samples were collected with Golder personnel donning respirators. A photo-ionization detector (PID) was utilized during sampling with no results observed above background concentrations.

### **Work Anticipated Next Week**

Analysis of the seismic survey data is anticipated to take approximately four weeks to complete. Results will likely be available the week ending July 30, 2004.

Philip will likely perform work in the following week to place a plastic and soil cover over the two areas where the unknown material was observed at Site G.

**Photos from June 26, through July 1, 2004:**



Clearing the eastern bank of Dead Creek for the Seismic Survey (June 26, 2004).



Dead Creek, view north towards Queeny Avenue (June 26, 2004).



Downhole seismic survey at Bedrock Well, BR-H, (June 26, 2004).



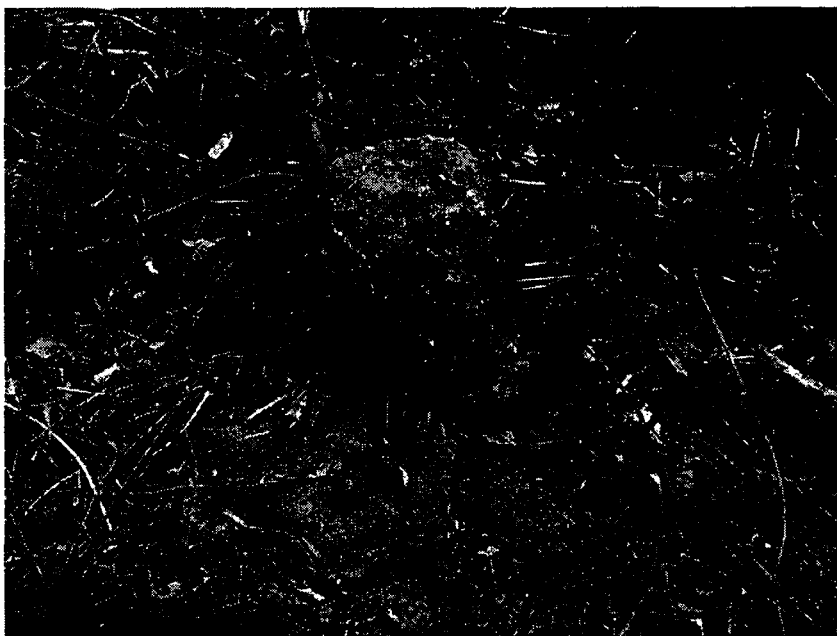
Repeated NAPL Survey at well EE-11: the bailer to top-of-water column test showed a sheen of NAPL on the exterior of the bailer, but clear water only entered the bailer (June 26, 2004).



Repeated NAPL Survey at well EE-11: the cotton string test showed slight staining at the water surface, but no indication of DNAPL (June 26, 2004).



Location 'L2' of unknown material at Site G (June 30, 2004).



The black-colored unknown material appeared to be 'runny' at location 'L2' (June 30, 2004).



Yellow chunks of unknown material were observed at location 'L2' (June 30, 2004).





Sampling the unknown material at location 'L2' (July 1, 2004).



The large chunks of yellow-colored unknown material were sampled at location 'L2' (July 1, 2004).